Massachusetts Department of Public Health

Fact Sheet: Irradiation

What is irradiation?

Food irradiation is a food safety technology that exposes food to a specific amount of radiant energy for a specified length of time. There are several disease-causing microorganisms that can be controlled by irradiation, including *E. coli* O157:H7, *Salmonella* and *Listeria*.

Why are some manufacturers using irradiation?

Irradiation of food can improve food safety and quality by decreasing the level of harmful organisms, increasing the shelf life of the product, reducing loss from spoilage, and controlling insect infestations.

How does the process work?

Packaged foods are passed through an enclosed chamber, where they are exposed to an ionizing radiation source. There are different sources of radiation that are utilized: gamma rays from cobalt 60 or cesium 137, x-rays, and electrons generated from machine sources. In the U.S., the most common irradiation source is cobalt 60. These gamma rays pass through the packaging and the food, leaving no residue. The FDA has established standard radiation doses and duration for all foods approved for irradiation.

What foods are currently irradiated?

Several different types of foods have been approved for irradiation in the United States. Wheat flour and white potatoes were approved in the 1960s. Pork, fruits, vegetables, herbs and spices were approved in the 1980s, while poultry and meat were approved in the 1990s.

Are irradiated foods safe to eat?

Extensive studies have been done looking at the safety of irradiated foods in both animals and humans. There has been no evidence of adverse health effects in these trials. In fact, NASA astronauts eat foods that have been irradiated at substantially higher levels than those approved for general use. Many organizations have endorsed the safety of irradiated foods, including the World Health Organization (WHO), the Centers for Disease Control and Prevention (CDC), the Assistant Secretary of Health, the U.S. Department of Agriculture (USDA), the Food and Drug Administration (FDA), the American Medical Association (AMA), and the American Dietetic Association (ADA). However, food irradiation is not a substitute for safe food-handling practices by producers, processors, and consumers.

Are irradiated foods radioactive?
Everything in our environment, including food, contains trace amounts of radioactivity to some extent due to exposure to natural background radiation. Irradiation of food does not introduce additional radioactivity.

Are irradiated foods labeled differently?

Yes. A distinctive logo called the "radura" is used on all irradiated products. In addition, the label must contain the words "treated by irradiation" or "treated with radiation". It is not required to label a food if a minor ingredient, such as a spice, has been irradiated. Irradiated foods served in restaurants are not required to be labeled.

What do irradiated foods taste like, and does irradiation affect the nutritional value of foods?

Irradiation does not noticeably change the taste, texture, or appearance of food, although excess irradiation can cause color changes or off odors/flavors. The nutritional value of irradiated foods is not significantly different after undergoing the irradiation process, although some minor changes may occur.

Do irradiated foods cost more foods that are not irradiated?

Irradiated foods cost slightly more than their conventional counterparts. Only a few manufacturers use this technology because the capital costs of irradiation equipment are high. As consumer acceptance increases and this technology becomes more widely utilized, it is likely that costs will decrease.

Who is responsible for monitoring and regulating food irradiation?

The FDA is responsible for assessing the safety of irradiated food as well as reviewing and approving sources of irradiation as a food additive. The USDA is responsible for ensuring the safety and wholesomeness of irradiated meat and poultry. The Nuclear Regulatory Commission (NRC) monitors the safe operation of irradiation facilities.

Irradiated foods should be handled, stored, and cooked in the same way as non-irradiated foods. These foods can still become contaminated with harmful organisms if handled improperly after irradiation.

Where can I get more information about irradiation?

Massachusetts Department of Public Health
Division of Epidemiology and Immunization (617) 983-6800
Division of Food and Drugs (617) 983-6712

Centers for Disease Control and Prevention at www.cdc.gov